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This tutorial surveys design methods for energy-efficient system-level design. We consider systems consisting of a hardware platform and software layers. We consider the three constituents of hardware that consume energy, namely computation, ...


2 [Fusion-based register allocation](#) [Guei-Yuan Lueh, Thomas Gross, Ali-Reza Adi-Tabatabai](#)May 2000 **Transactions on Programming Languages and Systems (TOPLAS)**, Vol**Publisher:** ACM [Request Permissions](#)Full text available: [Pdf](#) (475.45 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)
[review](#)**Bibliometrics:** Downloads (6 Weeks): 6, Downloads (12 Months): 67, Citation Count: 6

The register allocation phase of a compiler maps live ranges of a program to registers: more candidates than there are physical registers, the register allocator must spill a live range (if its home location is in memory) or split a live range ...

Keywords: performance evaluation, register allocation**3** [Parallel execution of prolog programs: a survey](#) [Gopal Gupta, Enrico Pontelli, Khayri A.M. Ali, Mats Carlsson, Manuel V. Hermenegildo](#)July 2001 **Transactions on Programming Languages and Systems (TOPLAS)**, Vol**Publisher:** ACM [Request Permissions](#)Full text available: [Pdf](#) (1.95 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)**Bibliometrics:** Downloads (6 Weeks): 23, Downloads (12 Months): 225, Citation Count: 13

Since the early days of logic programming, researchers in the field realized the potential exploitation of parallelism present in the execution of logic programs. Their high-level presence of nondeterminism, and their referential transparency, ...

Keywords: Automatic parallelization, constraint programming, logic programming, prolog**4**[Global array reference allocation](#)

 [Guido Araujo, Guilherme Ottoni, Marcelo Silva Cintra](#)

April 2002 **Transactions on Design Automation of Electronic Systems (TODAES)**

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (354.75 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 5, Downloads (12 Months): 32, Citation Count: 1

Embedded systems executing specialized programs have been increasingly responsible share of the computer systems manufactured every year. This trend has increased the number of processors that can guarantee high-performance under stringent ...

Keywords: Address registers, DSPs, auto-increment addressing modes, register allocation

5 [Improving readability of contextualized text explanations](#)

 [Wallace Chigona, Thomas Strothotte](#)

February 2003 **AFRIGRAPH '03**: Proceedings of the 2nd international conference on Computer graphics, virtual Reality, visualisation and interaction in Africa

Publisher: ACM


Full text available:  Pdf (377.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index t](#)

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 34, Citation Count: 0

Dual-Use of Image Space (duis) is an interactive technique for presenting text corresponding images *within* the image space. From a technical point of view, the pixels in the image are used both as text which can be read as well ...

Keywords: distortion, dual-use of image space, monotone polygons, multi-column presentation, readability, text layout

6 [Parametric shape analysis via 3-valued logic](#)

 [Mooly Sagiv, Thomas Reps, Reinhard Wilhelm](#)

May 2002 **Transactions on Programming Languages and Systems (TOPLAS)**, Volume 23

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (1.10 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 15, Downloads (12 Months): 123, Citation Count: 48

Shape analysis concerns the problem of determining "shape invariants" for programs that perform destructive updating on dynamically allocated storage. This article presents a parametric shape analysis that can be instantiated in different ...



Keywords: 3-valued logic, Abstract interpretation, alias analysis, constraint solving, destructive updating, pointer analysis, shape analysis, static analysis

7 [Cg: a system for programming graphics hardware in a C-like language](#)

 [William R. Mark, R. Steven Glanville, Kurt Akeley, Mark J. Kilgard](#)

July 2003 **SIGGRAPH '03**: SIGGRAPH 2003 Papers

Publisher: ACM  [Request Permissions](#)

Full text available:  Mov (24:34 MIN),  Pdf (2.57 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Bibliometrics: Downloads (6 Weeks): 56, Downloads (12 Months): 353, Citation Count: 77

The latest real-time graphics architectures include programmable floating-point vertex processors, with support for data-dependent control flow in the vertex processor. We present a new programming language and a supporting system that are designed ...

Also published in:

July 2003 **Transactions on Graphics (TOG)** Volume 22 Issue 3

8 Formalizing the safety of Java, the Java virtual machine, and Java card

 Pieter H. Hartel, Luc Moreau

December 2001 **Computing Surveys (CSUR)** , Volume 33 Issue 4

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (442.86 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 65, Downloads (12 Months): 486, Citation Count: 13

We review the existing literature on Java safety, emphasizing formal approaches, and Java safety on small footprint devices such as smartcards. The conclusion is that although good work has been done, a more concerted effort is ...

Keywords: Common criteria, programming

9 Migrating sockets—end system support for networking with quality of service guarantees

 David K. Y. Yau, Simon S. Lam

December 1998 **IEEE/ ACM Transactions on Networking (TON)** , Volume 6 Issue 6


Publisher: IEEE Press

Full text available:  Pdf (369.10 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 44, Citation Count: 1

Keywords: CPU scheduling, bandwidth scheduling, packet demultiplexing, quality of guarantees, user level protocol

10 Dynamo: a transparent dynamic optimization system

 Vasanth Bala, Evelyn Duesterwald, Sanjeev Banerjia

August 2000 **PLDI '00: Proceedings of the ACM SIGPLAN 2000 conference on Program design and implementation**

Publisher: ACM  [Request Permissions](#)

Full text available:  Pdf (156.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)


Bibliometrics: Downloads (6 Weeks): 26, Downloads (12 Months): 286, Citation Count: 176

We describe the design and implementation of Dynamo, a software dynamic optimizer that is capable of transparently improving the performance of a native instruction stream that executes on the processor. The input native instruction stream ...

Also published in:

May 2000 **SIGPLAN Notices** Volume 35 Issue 5

11 Java bytecode as a typed term calculus

 Tomoyuki Higuchi, Atsushi Ohori

October 2002 **PPDP '02: Proceedings of the 4th ACM SIGPLAN international conference on the theory and practice of declarative programming**

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (214.36 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 17, Citation Count: 5

We propose a type system for the Java bytecode language, prove the type soundness of a type inference algorithm. In contrast to the existing proposals, our type system yields a term calculus similar to type systems of lambda calculi. ...

Keywords: Java bytecode, bytecode verifier, type inference, type system

12 [Secure program partitioning](#)

 [Steve Zdancewic](#), [Lantian Zheng](#), [Nathaniel Nystrom](#), [Andrew C. Myers](#)

August 2002 **Transactions on Computer Systems (TOCS)**, Volume 20 Issue 3

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (497.12 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 100, Citation Count: 11

This paper presents secure program partitioning, a language-based technique for protecting confidential data during computation in distributed systems containing mutually trusting Confidentiality and integrity policies can be expressed by annotating ...

Keywords: Confidentiality, declassification, distributed systems, downgrading, integrity, distrust, secrecy, security policies, type systems

13 [Using model dataflow graphs to reduce the storage requirements of constraints](#)

 [Bradley T. Vander Zanden](#), [Richard Halterman](#)

September 2001 **Transactions on Computer-Human Interaction (TOCHI)**, Volume 8 Issue 3

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (1.28 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index](#)

Bibliometrics: Downloads (6 Weeks): 3, Downloads (12 Months): 28, Citation Count: 0

Dataflow constraints allow programmers to easily specify relationships among applications in a natural, declarative manner. Most constraint solvers represent these dataflow relationships as directed edges in a dataflow graph. Unfortunately, dataflow ...

Keywords: Class-instance model, dataflow constraints, graphical interfaces, language implementation, programming environments, prototype-instance model, storage optimization

14 [The apprentice challenge](#)

 [J. Strother Moore](#), [George Porter](#)

May 2002 **Transactions on Programming Languages and Systems (TOPLAS)**, Volume 24 Issue 2

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (212.09 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 7, Downloads (12 Months): 48, Citation Count: 7

We describe a mechanically checked proof of a property of a small system of Java programs involving an unbounded number of threads and synchronization, via monitors. We adapt the semantics of the javac compiler as the semantics and verify the system at ...

Keywords: Java, Java Virtual Machine, mutual exclusion, operational semantics, parallel distributed computation, theorem proving

15 [A region-based compilation technique for a Java just-in-time compiler](#)

 [Toshio Suganuma](#), [Toshiaki Yasue](#), [Toshio Nakatani](#)

June 2003 **PLDI '03: Proceedings of the ACM SIGPLAN 2003 conference on Programming language design and implementation**

Publisher: ACM  [Request Permissions](#)

Full text available:  Pdf (158.62 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)

Bibliometrics: Downloads (6 Weeks): 8, Downloads (12 Months): 80, Citation Count: 10


Method inlining and data flow analysis are two major optimization components for efficient transformations, however they often suffer from the existence of rarely or never executed code contained in the target method. One major problem lies in ...

Keywords: dynamic compilers, on-stack replacement, partial inlining, region-based

Also published in:

May 2003 **SIGPLAN Notices** Volume 38 Issue 5

16 Tail recursion elimination in deductive databases

 Kenneth A. Ross

June 1996 **Transactions on Database Systems (TODS)**, Volume 21 Issue 2

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (346.78 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index](#)

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 23, Citation Count: 0

We consider an optimization technique for deductive and relational databases. The optimization technique is an extension of the magic templates rewriting, and it can improve the performance of query evaluation by not materializing the extension of intermediate ...

Keywords: deductive databases, magic sets, query optimization, tail recursion

17 Optimization of mesh locality for transparent vertex caching

 Hugues Hoppe

July 1999 **SIGGRAPH '99**: Proceedings of the 26th annual conference on Computer graphics and interactive techniques


Publisher: ACM Press/Addison-Wesley Publishing Co.

Full text available:  Pdf (2.46 MB) Additional Information: [full citation](#), [references](#), [cited by](#), [index](#)

Bibliometrics: Downloads (6 Weeks): 19, Downloads (12 Months): 54, Citation Count: 31

Keywords: geometry compression, triangle strips

18 Partial redundancy elimination in SSA form

 Robert Kennedy, Sun Chan, Shin-Ming Liu, Raymond Lo, Peng Tu, Fred Chow

May 1999 **Transactions on Programming Languages and Systems (TOPLAS)**, Volume 20 Issue 3

Publisher: ACM  [Request Permissions](#)


Full text available:  Pdf (704.71 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 16, Downloads (12 Months): 169, Citation Count: 14

The SSAPRE algorithm for performing partial redundancy elimination based entirely on static analysis is presented. The algorithm is formulated based on a new conceptual framework, the fast redundancy graph, for analyzing redundancy, and represents the ...

Keywords: code motion, common subexpressions, data flow analysis, partial redundancy elimination, single assignment form

19 Ensuring code safety without runtime checks for real-time control systems

 Sumant Kowshik, Dinakar Dhurjati, Vikram Adve

October 2002 **CASES '02**: Proceedings of the 2002 international conference on Compilers, languages, and synthesis for embedded systems

Publisher: ACM


Full text available:  Pdf (127.10 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 9, Downloads (12 Months): 58, Citation Count: 8

This paper considers the problem of providing safe programming support and enabling software upgrades for control software in real-time control systems. In such systems techniques for ensuring code safety are greatly preferable ...

Keywords: compiler, control, programming language, real-time, security, static ana

20 Efficient optimistic parallel simulations using reverse computation

 Christopher D. Carothers, Kalyan S. Perumalla, Richard M. Fujimoto

July 1999 **Transactions on Modeling and Computer Simulation (TOMACS)**, Volume

Publisher: ACM  [Request Permissions](#)

Full text available:  Pdf (188.81 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited b](#)
[review](#)

Bibliometrics: Downloads (6 Weeks): 6, Downloads (12 Months): 55, Citation Count: 25





In optimistic parallel simulations, state-saving techniques have traditionally been use rollback. In this article, we propose reverse computation as an alternative approach, its execution performance against that ...

Keywords: parallel discrete event simulation, reverse computation, rollback, state-s

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